Crosshill is a mile to the north of Crumlin, a small village on the line of railway between Lisburn and Antrim; it is twelve miles west of Belfast and 3½ miles east of Lough Neagh, a sheet of water thirteen miles long and seven miles wide; it is thus possible that the remaining fragments of the mass which entered the earth's atmosphere may have fallen into the water. The distance of separation of stones belonging to a single meteoritic fall has not yet been observed to exceed sixteen miles; it has on several occasions been found to reach ten miles.

The Crumlin meteorite is the largest stone which has been seen to fall from the sky to the British Isles for eighty-nine years, and is larger than any which has fallen in England itself since the year 1795.

L. FLETCHER.

OPENING ADDRESSES AT THE MEDICAL SCHOOLS.

THE first week of October has again brought round the opening of the medical schools, and with it a series of addresses by distinguished members of the profession, in which the first year's man is told something of the calling in which he has elected to earn his livelihood. These addresses are this year perhaps more varied and interesting than usual; at any rate, even the cursory reader cannot help but be struck with the quantity and the quality of the advice of which the future practitioner has been during the last few days the recipient.

At Owens College, Manchester, the introductory address was delivered by Sir Dyce Duckworth. In it some points of great importance both to teachers, students and the profession at large were considered. In the present state of medical education in London, especially with regard to the development of the medical faculty of the University of London, the remarks of the lecturer under the heading of the standard of general education for medical students cannot escape the observation of those interested in this subject. It is well known that a supposed grievance of the London medical student, which has certainly been well aired, is that although he spends as much money, time and intellect on his medical curriculum as his fellow student at the Scottish universities, he obtains merely a license to practise, whereas the Scottish student receives what is certainly of more value in the eyes of the public, viz. a degree in medicine. Into this question Sir Dyce Duckworth did not enter, but his view seems to be that licenses should not be made more difficult or university degrees easier; in other words, that the distinction between the two should remain, and that the degree should be regarded as an indication of distinctly higher attainments conferred upon those already holding diplomas. Those interested in the obtaining of an efficient medical staff for the public services are strongly recommended to take to heart the somewhat ominous words of this experienced teacher.

At University College, Sheffield, the opening address was given by Sir Henry Howse, the president of the College of Surgeons. After some remarks pregnant with interest and suggestion upon the scientific training, viz. the biological, chemical and physical training, of the medical student, the lecturer passed on to the part of the curriculum devoted to practical training. Under this latter head, Sir Henry Howse emphasised the most important fact that no disease must be regarded as a textbook entity, but that each as it occurred in each individual patient possessed individual characteristics, and that successful treatment could only be attained by observing and allowing for these characteristics. The great effect of apparently small causes was aptly illustrated by the lecturer by showing the difference between a little excess of alkali or acid in the preparation of the liquor ammoniæ acetatis of the pharmacopœia.

At the Yorkshire College, Leeds, the opening address was delivered by Mr. Mayo Robson, who took for his subject the advance of surgery during the last thirty years. At the end of the lecture, the author referred to the advances made in medicine and predicted that the progress in the next century would be chiefly medical.

At Guy's Hospital, the opening of the winter session was celebrated on October 1 by a distribution of prizes and medals to the students who were successful last session by the Lord Mayor of London. The Dean read the report of the medical and dental schools and referred to the position of Guy's as a medical school in the reconstituted University of London, expressing a hope that the altered regulations for the matriculation examination would enable a larger number of London students to obtain the doctor of medicine degree.

The London Hospital Medical College opened its 118th session with an old students' dinner on October 1. In a long speech, the chairman of the hospital referred to the great size and enormous work the hospital was doing both in relieving the sufferings of humanity and in the cause of medical education.

A most interesting address was delivered at the opening of the sixty-first session of the London School of Pharmacy, on October 1, by Prof. W. Palmer Wynne, F.R.S. The subject was the changes which have taken place on what may be called the scientific side of pharmacy during recent years, and especially those in which progress in chemistry has played a part. Prof. Wynne discussed the connection between chemical composition and physiological action, and emphasised the extreme difficulty of reducing the results obtained in this connection to anything approaching law, at the same time admitting the great progress which had been made in this direction.

F. W. T.

NOTES.

WE much regret to see the announcement of the sudden death of Dr. J. H. Gladstone, F.R.S., in his seventy-sixth year.

MR. J. ALLEN HOWE has been appointed curator and librarian of the Museum of Practical Geology in succession to Mr. F. W. Rudler, who, as mentioned in our last number, has retired.

THE zoological, botanical and geological collections of Dr. Sven Hedin have, it is stated, been presented by the explorer to the University of Stockholm.

THE death is announced, at the age of sixty-one, of Dr. Julius Ziegler, who for nearly thirty years was at the head of the meteorological department of the Frankfort Physikalische Verein.

THE next annual congress of the Royal Institute of Public Health is to take place in Liverpool in, probably, the third week of July next.

AT the Royal Microscopical Society on October 15, a demonstration on "Rock Changes in Nature's Laboratory" will be given by Prof. T. G. Bonney, F.R.S.

REPORTS of the following earthquakes have appeared in the *Times* during the past few days:—Advices from Guam state that 180 shocks of earthquake were felt in that island on September 25. The marine barracks and other buildings at Agana were destroyed.—Three violent earthquake shocks were felt at Tiflis at 2.30 a.m. on Saturday last, October 4.—A severe earthquake, lasting two minutes, was felt at New Marghilan, Ferghana, on Monday afternoon, October 6.

A TELEGRAM from the Governor of Martinique states that Mont Pelée is again emitting clouds and that rumblings are being heard. There has been an overflow of hot water from the crater in the region of Basse-Pointe, and slight earthquake shocks have been felt at Bourg Sainte Marie and at Bourg Trinité. A telegram from Kingstown, St. Vincent, reports that a slight eruption of the Soufrière occurred on the evening of October 1 after a week's tranquillity. The volcano was quiet on October 2.

AT the opening ceremony of the new session of the Royal College of Science, held in the lecture theatre of the Victoria and Albert Museum on October 2, the Huxley gold medal was for the first time awarded to Mr. J. E. S. Moore, associate of the College, in recognition of work which he has already carried through and is still continuing in the Huxley Research Laboratory, in connection with his investigations into the African lake fauna and his studies in cytology and nuclear metamorphosis, commenced at the Naples Zoological Station. The medal is intended as an award for research carried out in the Huxley Laboratory in some branch of natural science in which Huxley was distinguished. The recipient has the option of a silver-gilt medal, and the award is in either case accompanied by the balance of the interest on the capital sum invested for the purchase of books, instruments or as an aid to research.

THE Official Reports of the Belgian Antarctic Expedition have been presented by the Belgian Government to the Scottish Antarctic Expedition, which is shortly to take its departure. Mr. W. S. Bruce, the leader of the expedition, has also received a telegram from Lieut. G. Lecointe, of the recent Belgian expedition, wishing him success.

CAPTAIN SVERDRUP and the other members of his recent expedition were entertained by the Geographical Society at Christiania last week. It was announced at the gathering that the Grand Cross of the Order of St. Olaf had been conferred upon Captain Sverdrup, that the Fram medal in gold was to be bestowed upon Peter Henriksen, and that the other members of the expedition were to receive the same in silver.

AT a meeting of the local Society for the Prevention of Consumption held in Newcastle-upon-Tyne on Thursday last under the chairmanship of Mr. Watson Armstrong, it was decided to build a sanatorium for fifty patients at a cost of 50,000*l.*, towards which the sum of 8000*l.* was subscribed at the meeting. Of this amount the chairman contributed 4000*l.*

ARRANGEMENTS are already in progress for the next meeting of the Australasian Medical Congress, which is to be held at Adelaide in 1905 under the presidency of Prof. E. C. Stirling, F.R.S. The business is to be conducted in seven sections, as follows:—Medicine; surgery; gynæcology; diseases of eye, ear and throat; anatomy, physiology, pathology and pharmacology; public health; State medicine and medical ethics.

DR. LOGAN TAYLOR set sail last week in charge of an expedition which has been sent by the Liverpool School of Tropical Medicine to inquire into the health conditions of the Gold Coast, reports having from time to time during the past year reached this country as to the ill-health which has been prevalent in the colony. The expedition will not be occupied so much with research work as with practical operations against the unhealthy conditions of the principal towns, and it will, so far as possible, work in conjunction with the medical staff of the colony.

IN continuation of the announcement made a few weeks ago (September 4, p. 446), we learn from the *Times* that a resolution has been published stating that the Government of India has come to the conclusion that central authority is needed to ensure that the work of scientific research in India is distributed to the best advantage, that each investigator confines his researches to the subject with which he is most capable of dealing, and that energy is not wasted by the useless duplication of inquiries or misdirected by lack of cooperation amongst the various departments. Hence a board of scientific advice is to be formed, comprising the heads of the Meteorological, Geological, Botanical, Forest, Survey, Agricultural and Veterinary departments, and other scientific officers of special attainments. This board is to prepare every year a general programme of research and a report describing what has been done. The main object of the scheme is to promote the economic development of the country. The resolution mentions the various scientific officers appointed in recent years, and says that the development of machinery in the different departments has rendered more essential than ever the coordination of scientific inquiry. The special Indian correspondent of the *Lancet* points out that to complete the scheme of the Government another advisory board, similarly constituted to that already referred to, is required for the original investigation of human diseases. There are many complaints, he says, towards the understanding of which clinical observation has done little, and more scientific research upon them is wanted.

WE learn from the *Isle of Man Times* that on Saturday last the Isle of Man Natural History and Antiquarian Society paid a visit to the new buildings at Port Erin utilised by the Insular Government and the Liverpool Marine Biology Committee for the purposes of a biological laboratory and museum, and also as a fish hatchery. An interesting address was given by Prof. Herdman, director of the biological station, who explained the purpose the laboratory was intended to serve in the way of education and scientific research, and referred to the advantage of bringing students into contact with the living animals as they were enabled to do in an institution of this character. He thought the principal work of the fish hatchery would be the breeding and rearing of lobsters and flat fish. Mr. P. M. C. Kermode, the hon. sec. of the Society, unveiled a bust of Edward Forbes, which he has presented to the new institution, and gave a brief address on the life and work of this illustrious biologist, who was born in the Isle of Man and accomplished considerable work in Manx natural history. Mr. Isaac Thompson also spoke in receiving the bust on behalf of the Liverpool Marine Biology Committee, and made an appeal for scientific publications for the station library; and Sir James Gell (the acting governor) alluded to the part which the Tynwald Court had taken in providing the new building and the support given to the project by Deemster Kneen. The proceedings terminated with an inspection of the tanks in the aquarium, the microscopic specimens in the gallery and the local type collection in the museum gallery, all arranged by Mr. H. C. Chadwick, the resident curator of the institution. In the afternoon the Society paid a visit to the Neolithic Stone Circle on the Meayll hill.

THE New South Wales Government has recently made an experiment with the object of introducing European flat-fishes to the colony. At the time of arrival of the consignment of fishes, there were alive 560 plaice, twenty English soles, three Mediterranean soles and one female lobster. The experiment is reported to have quite come up to the expectations of the fisheries commissioners, as, although some of the fish dispatched died on the voyage out, they were looked upon only as of secondary importance in the experiment, all the special arrangements having been made to suit the plaice.

IT is stated in the *Scientific American* that Prof. R. Fessenden, whose system of wireless telegraphy is at present receiving the attention of the United States Government, has announced his intention of resigning his position in the

Weather Bureau, and that stations equipped with his instruments are shortly to be located along the Pacific coast, for use in the dissemination of the weather reports throughout that part of the country.

At the festivities held in Bologna on the occasion of Mr. Marconi's return to his native town, Prof. Augusto Righi, in congratulating his former pupil on his successes, spoke to the following effect:—Perhaps no one can appreciate better than I his exceptional inventive power and his unusual intellectual gifts. I remember with great pleasure his visits when quite a young man, for asking my advice, for explaining his experiments, made with simple apparatus ingeniously put together, and for keeping me informed of his new projects, in which his passion for applied science always stood out. Even then I predicted that he would sooner or later attain fame. The system of wireless telegraphy which he derived from Hertz's classical experiments . . . is the most pleasing transference to the field of practical industry of those instruments and principles which might have seemed to be relegated to the domain of natural philosophy. Science always contains the germs of every unexpected marvel, and never has a seed fallen in ground that is more fertile or more suitable for causing it to germinate and transform into a fine and healthy plant. It is to the credit of Marconi that he has once more proved how much those are in error who regard with disdainful or indifferent eyes the work carried on continuously in the silence of the laboratory by the modest and disinterested scientific students, and who only appreciate science in proportion to the immediate uses that can be obtained from it. They do not know that even from the most abstruse result, a sympathetic mind may unexpectedly derive one of those applications which accelerate the advance of humanity on the path of progress and social welfare.

It is suggested by Mr. R. Hedger Wallace in the October number of *Nature Notes* that Gilbert White's house, which, as has already been stated in these columns, is offered for sale, should be purchased and used as a school of nature-study. "What," says Mr. Wallace, "could well be housed at Selborne, and would assist the nature-study movement, is a library—say the 'Gilbert White Memorial Library'—which would illustrate what has been and is the influence of his teaching over the wide world—especially the English-speaking world. The number of such books is by no means small, and when once the library is formed, if it be kept up to date, it would be of very great service indeed to all interested in nature-lore and nature-studies."

At the suggestion of the Astronomer Royal for the Cape, Mr. R. T. A. Innes, of the Royal Observatory, Cape of Good Hope, has made special observations in order to decide whether the stars marked ? in the Cape Photographic Durchmusterung really exist or not. Using a 7-inch refractor, Mr. Innes has found that all these stars except seventeen do exist.

The application of the stereoscope to lantern projections has proved a fruitful field for the ingenuity of inventors. M. J. Macé de Lépinay now describes a very simple method of producing the desired effects. He projects two pictures side by side on the screen, and provides each observer with a pair of prisms the angle of which depends on the distance of that observer from the screen. Taking the two images at a distance of one metre apart, the angles of the prisms used are 12°, 10°, 8° and 6° for distances of 4·5, 5·4, 6·8 and 9 metres, the accommodatory power of the eye enabling intermediate distances to be used without further multiplication of prisms. One of the advantages of the system is the convenient and portable character of the prisms when mounted in the form of spectacles for observing the projections.

Prof. Rinaldo Ferrini contributes to the Lombardy *Rendiconti* a short note on the calorimetric determination of high temperatures. A mass of platinum or nickel being heated to the temperature to be measured and then plunged into a water calorimeter, the rise of temperature determines the number of units of heat given out by the metal, and it is only necessary to know the specific heat of the metal at different temperatures in order to determine the initial temperature. Taking an approximate algebraic formula for the relation between specific heat and temperature, Prof. Ferrini deduces a linear equation for the temperature calculated with the use of nickel, and a quadratic equation for the temperature calculated by the use of platinum, within the limits considered in his investigation.

Messrs. Witherby and Co., the publishers of *Knowledge*, announce for early publication in book form the series of articles by Mr. E. W. Maunder entitled "Astronomy without a Telescope," which has been recently running through *Knowledge*.

We are glad to notice that a new and cheaper edition of Prof. L. C. Miall's admirable book "Round the Year" has been issued by Messrs. Macmillan and Co., Ltd. In this popular form the book will doubtless be much in favour in schools where nature-study is encouraged.

The secretary of the National Home Reading Union informs us that the new syllabus of subjects for the coming session—the fourteenth—of the Union is now ready for distribution. We notice that among the subjects included in the special courses are geology, Egyptian archæology, physiology and the laws of health. Information as to fees, text-books, &c., can be obtained from the secretary of the Union, Surrey House, Victoria Embankment, W.C.

The October issue of *Climate*, the interesting and useful organ of the Livingstone College at Leyton, contains many items relating to health and travel which should be of service to travellers, *e.g.* among its contents are to be found illustrated interviews with Sir Harry Johnston, respecting "An African Equipment," and Dr. H. White, concerning "Life and Travel in Persia"; there are also, among other things, notes on "Kashmir from a Climatic Standpoint" and the progress of the various campaigns against malaria.

Mr. J. C. Nimmo promises, "Fragments in Philosophy and Science," by Prof. J. Mark Baldwin; "History of the Babylonians and Assyrians," by Dr. H. Winckler; and new editions of Rev. F. O. Morris's "A History of British Birds," six volumes (illustrated), and "Natural History of British Moths," four volumes (illustrated).

In Messrs. Hutchinson and Co.'s new list of announcements we notice:—"British Fresh-water Fishes," by Sir Herbert Maxwell, Bart., F.R.S.; "Fishes of our Seas," by F. G. Aflalo, W. Senior and F. B. Marston; "British Birds," by Aubyn Trevor-Battye; "British Butterflies and Moths," by F. Edward Hulme; and "British Mammals," by Sir Harry Johnston, G.C.M.G., K.C.B., all in the Woburn Library, and each illustrated; "The *Polar Star* in the Arctic Seas," by H.R.H. the Duke of the Abruzzi, in two volumes (illustrated); "Lord Lilford on Birds," a collection of unpublished writings by the late Lord Lilford, with contributed chapters on falconry and otter hunting, his favourite sports, edited by Aubyn Trevor-Battye, in parts (illustrated); "Our Poultry and all about Them," by Harrison Weir" (illustrated); "Hillside, Rock and Dale," bird life pictured with pen and camera by Oliver G. Pike; "Lizards, Living and Extinct," by T. Saville-Kent (illustrated); "The Insect Book of North America," by Dr. L. O. Howard (illustrated); "The Butterfly Book of North America," by W. J. Holland (illustrated).

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mrs. E. L. Francis; a Chacma Baboon (*Cynocephalus porcarius*) from South Africa, presented by the 4th Co. Army Service Corps; an Anubis Baboon (*Cynocephalus anubis*) from West Africa, presented by Mr. R. D. Whigham; a Formosan Deer (*Cervus taëvanus ?*) from China, presented by Captain Percy Scott, H.M.S. *Terrible*; three Herring Gulls (*Larus argentatus*), European, presented by Mr. F. W. Hunt; a Land Rail (*Crex pratensis*), British, presented by Miss Elsie E. Hutton; a Schmidt's Monkey (*Cercopithecus schmidti*) from East Africa, a Black-cheeked Monkey (*Cercopithecus melanogenys*) from West Africa, two Rhesus Monkeys (*Macacus rhesus*), an Indian Python (*Python molurus*) from India, a Brown Macaque (*Macacus arctoides*) from Burmah, an Amphiuma (*Amphiuma means*) from North America, a Lion Marmoset (*Midas rosalia*) from South-east Brazil, two Eyras (*Felis eyra*) from South America, deposited.

THE SCIENTIFIC AND TECHNICAL EXHIBITS AT THE ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

THIS section of the Royal Photographic Society's exhibition appears to be rather smaller than on the two previous occasions, that is, since the larger accommodation of the New Gallery made it possible to represent adequately this side of photographic work. We hope that this is not an indication that the section is receiving less attention and is likely to suffer extinction, the fate that we regret to observe has overtaken the apparatus section, except, indeed, so far as concerns the trade stalls and a few exhibits that appear to be out of place in any of the existing departments.

The most striking novelty in the Gallery is a "parallax stereogram" shown by Mr. F. E. Ives. No details are furnished, but we believe that the photograph is taken by means of a lens of large diameter obscured except for two apertures, one on each side, so that it acts in a similar way to the two lenses of the ordinary stereoscope camera, but that the two images are superimposed. In front of the sensitive plate there is placed a screen with vertical lines on it, alternately opaque and transparent, at such a distance that each image will impinge upon the plate in narrow, vertical strips and in the shadows of the opaque lines cast by the light transmitted by the other opening in the lens. The two images are thus received on the plate in narrow, alternating strips. For viewing, the eyes take the place of the openings in the lens, the lined screen remaining in position to keep the two images separate. The correct position for the eyes is indicated by two holes in a board, no other apparatus being necessary. The effect is perfect.

The only example of colour photography by the Lippmann process is a photograph of the spectrum of the arc light by Mr. Edgar Senior. This is an improvement on Mr. Senior's previous noteworthy results, being taken with a narrower slit, but still the colours shown are not quite the same as those which one sees in the direct spectrum. It seems not unlikely that the differences are inherent in the process. Of other prints in colour, Mr. Brewerton contributes some in which the blue print is in Prussian blue, and the red and yellow superposed carbon prints, and Miss Acland some copies of miniatures by a modification of the Sanger Shepherd three-film process. These results are admirable, but they are not convincing. It would be better if an object were used less valuable than a precious miniature and more convenient than a landscape, so that the object and the copy could be exhibited side by side. It is well known that very good results can be obtained; we want now to see how near they are to perfection.

Mr. Hort Player exhibits some splendid examples of his method of copying engravings by superposition. The ordinary relative positions of the engraving and the sensitive paper are reversed, the light passing through the sensitive paper before it lluminates the engraving. A yellow screen is used, and potassium iodide is added to the developer. The whiteness of the ground, the blackness of the lines and the sharpness of the detail are excellent.

Photomicrography is well represented. The most notable examples are a series of photomicrographs taken in connection with the bacterial treatment of sewage, exhibited by Dr. Clowes. The enlargements vary from about natural size up to three thousand diameters. These fifty or more photographs may well be accepted as a model of what this kind of technical work should be. Mr. Ives has twelve photomicrographs made with a small and simple apparatus that is not described. The results would do credit to any apparatus, and show what may be done by care and skill without elaborate conveniences. Among the other work of this class that deserves commendation is a series of microphotographs of etched alloys by Mr. Earnest A. Lewis.

Astronomical and spectroscopic photography is well represented by very fine work from Sir Norman Lockyer, Captain Hills, the Greenwich Observatory and others. Some of the spectra have no wave-length scale attached, or any other indication of the part of the spectrum represented, and others bear no indication of the facts sought in their preparation or of the facts that the spectra demonstrate. If a little information of this kind were invited by the Society's officers and incorporated in the catalogue, the exhibits would gain vastly in interest. This want of information is also manifest in the "multiple lightning flash," fourfold, by Mr. J. Howden Wilkie, presumably taken with a swinging camera, and in other cases.

There are many other exhibits that deserve more than a passing mention. Snow formations, huge "caps" and "mushrooms" are illustrated by Mr. Vaughan Cornish (see p. 453 of this volume). Balloon photographs, Röntgen-ray work, the photography of animals and meteorological photography are represented by collections of good and in some cases unique examples.

THE BRITISH ASSOCIATION AT BELFAST.

SECTION K.

BOTANY.

OPENING ADDRESS BY PROF. J. REYNOLDS GREEN, M.A., SC.D., F.R.S., PRESIDENT OF THE SECTION.

THE visits of the British Association to a particular city recur with a certain irregular frequency and bring with them a temptation to the President of a Section to dwell in his opening Address on the progress made in the science associated with that Section during the interval between such consecutive visits. This course possesses a certain fascination of its own, for it enables us to realise how far the patient investigations of years have ultimately led to definite advances in knowledge and to appreciate the difficulties that have involved disappointments, and that still have to be surmounted. We like to look back upon the struggles, to record the triumphs, to deplore the failures and to brace ourselves for new efforts. The opportunity afforded hereby for criticism of methods, for reconsideration of what have been held to be fundamental principles, for the laying down of new lines of work based upon longer experience, shows us how desirable such a periodical retrospect may be.

Standing as we do almost at the threshold of a new century, it seems particularly advisable that we shall occupy our thoughts with some such considerations to-day. I do not wish, however, so much to dwell upon the past and to lead my hearers to rest in any way satisfied with the achievements of the last century, phenomenal as they have been, as to direct attention to the future and to place before you some of those problems which at the opening of the twentieth century we find awaiting investigation, if not solution.

I can only attempt to deal with a small portion of the botanical field. These are the days of specialisation, and when anyone is said to be a botanist, the question which arises at once is, Which particular section of botany is he associated with? The same principle of subdivision which cut up the old subject of Natural History into Zoology, Botany and Geology has now gone further as knowledge has increased, and three or perhaps four departments of botany must be recognised, each demanding as much study as the whole subject seemed to only fifty years ago. I shall therefore confine my remarks to-day to the field of vegetable physiology.

I should like at the outset to recommend this section of botanical work to those of the younger school of botanists who